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Lisims
Government

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April 30, 2004

FAXED

Honourable R. John Efford
Minister of Natural Resources
House of Commons
Ottawa, Ontario
K1A 0A6

By Facsimile: (613) 992-7277

Dear Minister:

Re: The Nisga'a Treaty and the Moratorium on West Coast Oil and Gas Exploration and Development – Follow-up from Our Meeting of March 11, 2004 and our letters of March 18, 2004 and April 23, 2004 – Proposals by Nisga'a Lisims Government to participate in Studies relating to the Strategic Environmental Assessment

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Further to our recent correspondence and meeting, we are forwarding to you the attached proposals for work which we believe must be committed to before there is any lifting of the current federal moratorium on offshore oil and gas activities in the Queen Charlotte Basin or the commencement of any oil and gas exploration or development activities in that area. As we have indicated to you, we are confident that the Nisga'a Lisims Government, through the auspices of our Nisga'a Fish and Wildlife Department, is capable of performing the proposed studies which, while they are of particular importance to the Nisga'a Nation and our interests under the Nisga'a Treaty, are also of vital importance to Canadians generally.

As we have discussed, and as you are well aware, one of the main areas in which serious "science gaps" need to be filled concerns the lack of base line data in respect of the marine resources of the Queen Charlotte Basin. You will see that our proposed studies will go a long ways towards filling these gaps as they pertain to marine resources that are the subject of Nisga'a interests under the Nisga'a Treaty. We have pointed out to you that, as they presently stand, the Terms of Reference for the Priddle Panel do not include assessment of matters which, under the terms of the Nisga'a Treaty, must be assessed. Not only do we insist that these matters be subject to a proper environmental assessment, we are eager to participate in, and be responsible for, the gathering of the all-important data necessary to a full and proper assessment.

The projects that will propose carrying out fall squarely within the recommendations of both the Expert Panel Report prepared for your Department by the Royal Society of Canada as well as the British Columbia Offshore Hydrocarbon Development: Report of the Scientific Review Panel, prepared by David Strong, Patricia Gallagher and Derek Muggeridge, January 2002.

In addition to the attached five year (2004-2009) budget for scientific research, we will need legal research in respect of further advice for this process and in the development of a regulatory regime. Our total budget request is as follows:

Scientific Research (see attached budget)	$ 5,487,404.
Other consultant fees	31,000.
Total	$ 5,518,404.

You will also recall that we have expressed concerns about the prospect of the federal and provincial governments designing a new regulatory regime, such as that which the Royal Society of Canada Expert Panel said should be put in place as a condition of lifting the moratorium, without properly involving the Nisga'a Nation as a government, in accordance with the provisions of our Treaty. However it has been difficult to propose a budget to support our participation in the regulation making exercise, in the absence of knowing when, and by whom, such an initiative will commence. As we have said to you previously, it is our fear that the process of regulatory design, and inter-governmental negotiation, may have already begun and is carrying on without our input. If so, this would compound the errors of the past and frustrate our ability to co-operate in this important aspect of your undertaking.

Therefore we look forward to hearing from you as to whether this process has commenced, and how we might be involved.

We look forward to a positive response.

Yours truly,

NISGA'A LISIMS GOVERNMENT

Joseph Gosnell, O.B.C., O.C. LL.D.
President

Att.

cc: Rt. Hon. Paul Martin, Prime Minister of Canada
Hon. Andrew Mitchell, Minister of Indian Affairs and Northern Development
Hon. David Anderson, Minister of the Environment
Hon. Geoff Regan, Minister of Fisheries and Oceans
Hon. Jack Austin, Leader of the Government in the Senate
Hon. Irwin Cotler, Minister of Justice and Attorney General of Canada
Hon. Pierre Pettigrew, Minister of Intergovernmental Affairs
Hon. Geoff Plant, Attorney General of British Columbia

PROPOSAL CONCEPT: NASS AREA MARINE STUDIES

NISGA'A FISHERIES AND WILDLIFE
30 APRIL 2004

SUMMARY

Eight proposals are presented in this document that were drafted by the Nisga'a Fisheries and Wildlife Program to address potential impacts of offshore oil and gas development on fisheries resources within the Nass Marine area (i.e., Nass Estuary, Iceberg Bay, Observatory and Portland Inlets).

The eight proposals are as follows:

1) Forming a research partnership group, planning/developing study plans, consultations, and training (2004-2009),
2) Eulachon embryonic egg, larvae and plankton study (2004-2009),
3) Juvenile salmonid (chum, pink, coho, chinook) mid-water trawl/seine study (2004-2009),
4) Halibut assessment program, including collecting information regarding forage fish (e.g., sand lance, capelin, etc.) from halibut stomach analyses (2004-2009),
5) Shrimp/prawn assessment and commercial catch monitoring program (2005-2009),
6) Crab (Dungeness, Tanner, King, etc.) assessment and commercial catch monitoring program (2007-2009),
7) Shellfish (bivalves, geoduck and abalone) intertidal and sub-tidal assessment programs (2005-2008), and
8) Marine mammal and bird surveys (2005-2009).

Project costs (total):

Year 1 (2004-2005): $ 243,444
Year 2 (2005-2006): $ 1,145,120
Year 3 (2006-2007): $ 1,091,420
Year 4 (2007-2008): $ 1,203,185
Year 5 (2008-2009): $ 1,189,485

Project costs in years 2-5 may be revised with respect to effort, area and sampling requirements depending on input from the research partnership group.

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INTRODUCTION

This document outlines eight proposal concepts that would help address potential impacts of offshore oil and gas development on fisheries and wildlife resources within the Nass marine area (DFO Statistical Area 3). Very little data exist for salmonid (especially juvenile life stages) and non-salmonid species with respect to abundance, timing, and migration routes/patterns within the Nass marine area. The collection of key data on abundance, location, age, size and timing of pelagic, mid-water, and benthic species (e.g., eulachon, juvenile salmon, halibut, prawn/shrimp, Dungeness/Tanner/King crabs, bivalves, geoduck, abalone, phytoplankton, and zooplankton), coupled with oceanographic data (i.e., salinity, temperature, weather, current conditions, etc.), would allow fishery managers to determine what potential impacts would occur on Nass marine species if a moratorium was lifted on offshore oil and gas development in coastal areas of BC. Similarly, there are few systematic data for marine wildlife in the entire area of the Nass River. Considerable data are available on sea lions that breed in Alaska, but little is known about the distribution or abundance of these animals when they are in Canadian waters north of Prince Rupert. Even less is known about other species of marine mammals such as harbour seals, and fur seals and many of the smaller cetaceans. The distribution, abundance and timing of use of near shore habitats by marine birds is also relatively unknown. It is important to document haul out sites of seals and sea lions, major use areas of cetaceans, and concentration areas of marine birds to adequately manage those resources during offshore development.

PROPOSALS

The research described in the proposals outlined below would be conducted in the Nass Estuary (Areas 3-12, 3-18), Portland and Observatory Inlets. The work that is proposed would be conducted by the Nisga'a Fisheries and Wildlife Program with consultations/contributions from potential partners (e.g., DFO, other interested parties).

Project 1.0 Planning, Consultations, Development of Study Designs, and Training

Description

Nisga'a Fisheries proposes the formation of a Nass Area marine partnership group (e.g., Nisga'a Fisheries, DFO, and other interested parties) to plan/develop scientifically defensible marine fisheries research studies from 2004 to 2009 through consultations, workshops and training.

Tasks & Objectives

1) Form a Nass Area marine partnership group in August 2004 for developing scientifically-defensible research studies,
2) Conduct a 1-d workshop in Prince Rupert or Nanaimo in September 2004 to develop detailed study plans for projects 2 through 6 with research specialists,
3) Conduct a 3-d training workshop in Prince Rupert or Nanaimo in September 2004 for species identification of plankton, zooplankton, pelagic and benthic fish species, for standardizing collection/sampling gear, data to be collected and sampling methods with research specialists, and

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4) Further develop study designs of proposed research projects through regular consultations/meetings in regard to sampling locations, timing, effort, gear, catch monitoring and number of samples to be collected for analyses (e.g., phytoplankton, zooplankton, stomach, otoliths, and scales).

Estimated Costs of Project 1.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 56,220	(prep, planning & training workshop, consultations, study-design development)
Year 2 (2005-2006):	$ 32,290	(prep, consultations, study-design development)
Year 3 (2006-2007):	$ 32,290	(prep, consultations, study-design development)
Year 4 (2007-2008):	$ 32,290	(prep, consultations, study-design development)
Year 5 (2008-2009):	$ 32,290	(prep, consultations, study-design development)

Project 2.0 Eulachon Embryonic Egg, Larvae and Plankton Study

Description

Nisga'a Fisheries proposes conducting ocean (and in-river) surveys in the Nass Area marine waters to determine relative eulachon spawning stock biomass estimations based on in-river, egg and larval density measurements as outlined in McCarter and Hay sampling manual (2003). Intensive replicate sampling would be required to insure adequate spatial and temporal coverage. Bongo nets, acoustics, and river discharge measurements will be used to estimate egg and larval production. Accurate fecundity determinations of spawning adults are also required for determining estimates. This information has never been collected before for Nass eulachon, a large-run fish species that is vital to the Nisga'a for food, domestic and ceremonial purposes, and baseline data would be collected that would assist in determining potential impacts (i.e., abundance/timing changes, etc.) of any offshore development of oil and gas.

Task & Objectives

1) The Nisga'a vessel, Xsgaagim Lisims (44 ft; 356 hp), will be retrofitted with A-frame structures to deploy Bongo nets (57 or 19 cm; fished 0-15 m), acoustics and plankton nets, sampling gear and flow/salinity/temp meters will be purchased in Year 1 (August 2004),
2) A feasibility study will be conducted in Year 1 (September-October 2004) using the retrofitted vessel to sample marine waters near the Nass River, testing gear and collecting phytoplankton and zooplankton samples that will be analyzed, a short report detailing the feasibility study will be prepared in Year 1,
3) In Years 2-5, Bongo, plankton nets and acoustics tows will be conducted in the Nass marine (and in-river) area between April and September (2005-2008 @ 5 d per month;) collecting eulachon egg, larvae, and phytoplankton, zooplankton samples, and water flow and oceanographic (i.e., salinity, temp, etc.) data.
4) In Years 2-5, samples of phytoplankton (~ 900) and zooplankton (~ 900) will be analyzed for species and compositions from tow data,

5) In Years 2-5, detailed reports will be prepared of all results, generating estimates of egg and larval production, fecundity of spawners and calculating spawning biomass, and presented in DFO's manuscript, technical, or PSARC reports.

Estimated Costs of Project 2.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 60,724	(prep, feasibility studies)
Year 2 (2005-2006):	$ 224,500	(prep, field surveys, sample analysis, reporting)
Year 3 (2006-2007):	$ 224,500	(prep, field surveys, sample analysis, reporting)
Year 4 (2007-2008):	$ 224,500	(prep, field surveys, sample analysis, reporting)
Year 5 (2008-2009):	$ 224,500	(prep, field surveys, sample analysis, reporting)

Costs in Years 2-5 may be revised for effort, area, timing and samples to be analyzed depending on consultation process.

Reference

McCarter P.B. and D.E. Hay. 2003. Eulachon embryonic egg and larval outdrift sampling manual for ocean and river surveys. Can. Tech. Rep. Fish. Aquat. Sci. 2451: 33 p.

Project 3.0 Juvenile Salmonid (i.e., chum, pink, chinook and coho) Mid-Water Trawl, Acoustic and Seine Study

Description

Nisga'a Fisheries proposes conducting ocean surveys in the Nass Area marine waters to determine juvenile salmonid abundance and species composition by area and time, seasonal patterns of juvenile movements from fresh to marine waters, changes in length, weight, body condition and age over time, evaluation of environmental conditions (e.g., zooplankton, temperature and salinity) and relative wild vs. hatchery juvenile contributions of chinook and coho in Nass marine waters. A trawler, outfitted with Beam or Tucker nets and acoustic gear, and small seiner will be used to conduct mid-water trawls or sets in the Nass marine area from June to October (3 d of sampling per gear type) using similar techniques and sampling designs as performed by DFO in southern BC marine waters (e.g., Beamish et al. 1998, Romaine et al. 2001). Additional data (e.g., sea lice incidence, oceanographic data) and samples (zooplankton, otoliths and scales (for aging purposes)) will also be collected during ocean surveys. These data have never been collected before for Nass juvenile chum, pink, coho or chinook species and baseline data would be collected that would assist in determining potential impacts (i.e., relative abundance/timing changes, etc.) of any offshore development of oil and gas. In addition, data collected for juvenile salmonids would assist in determining productivity, escapement and biological goals for species like chum and pink.

Task & Objectives

1) In Year 1 (August 2004), preparations would be made, including outfitting appropriate trawler and seiner with appropriate gear, for setting up the study.
2) Also in Year 1 (September or October 2004), feasibility studies will be conducted for beam or tucker trawls (2 d), acoustic (2 d) and seine (2 d) surveys from depths ranging between 0 and 30 m. Fish species caught will be identified, counted and sub-samples will be measured for length and weight. Samples of zooplankton, otoliths and scales will also be collected in Year 1 and analyzed for environmental conditions and age determination. Salinity and temperature will also be recorded.
3) Years 2-5 (June to October), ocean surveys of beam or tucker trawls (3 d per month), acoustic (3 d per month) and seine (3 d) tows will be conducted in the Nass marine area. Fish species caught will be identified, counted and sub-samples will be measured for length and weight. Samples of zooplankton (~ 375), otoliths (~ 4500) and scales (~ 4500) will also be collected in Year 1 each year and analyzed for environmental conditions and age determination. Salinity and temperature will also be recorded.
4) In Years 2-5, detailed reports will be prepared of all results and presented in DFO's manuscript, technical, or PSARC reports.

Estimated Costs of Project 3.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 73,890	(prep, feasibility studies)
Year 2 (2005-2006):	$ 299,650	(prep, field surveys, sample analysis, reporting)
Year 3 (2006-2007):	$ 299,650	(prep, field surveys, sample analysis, reporting)
Year 4 (2007-2008):	$ 299,650	(prep, field surveys, sample analysis, reporting)
Year 5 (2008-2009):	$ 299,650	(prep, field surveys, sample analysis, reporting)

Costs in Years 2-5 may be revised for effort, area, timing and samples to be analyzed depending on the consultation process.

Reference

Beamish, R.J., D. McCaughran, J.R. King, R.M. Sweeting and G.A. McFarlane. 1998. Estimating the relative abundance of juvenile coho salmon in the Strait of Georgia using trawls. NPAFC Doc. No. 348, DFO, Nanaimo, BC, 27 p.

Romaine, S., K. Cooke, R. Kieser, S. McFarlane and M. Saunders. 2000. Hake and Euphausiid acoustic studies in the Strait of Georgia. Puget Sound Research 2001.

Project 4.0 Nass Area Halibut Assessment and Catch Sampling Program

Description

Nisga'a Fisheries proposes conducting ocean surveys in the Nass Area marine waters to assess relative spatial and temporal patterns of abundance, size and feeding patterns of benthic fish species (primarily halibut and potentially rockfish species) in the Nass marine area. Halibut were chosen for this

assessment study as they are an important food source of the Nisga'a, and important information can be collected regarding their prey, forage fish populations (e.g., sand lance, capelin, other fish and invertebrate prey), over time and area in Nass marine waters. This proposal is modeled in similar fashion as research conducted by Roseneau and Byrd (1999) that tested for the feasibility and effectiveness of using stomach contents from halibut to obtain spatial and temporal data on capelin and Pacific sand lance, two important species to piscivorous seabirds in Prince William Sound, Alaska. Evaluating the influence of fluctuating prey populations (e.g., forage fish) is critical to understanding the recovery of seabirds injured in oil spills (e.g., Exxon Valdex). Very little data are available regarding the abundance and behaviour of halibut in the Nass area and almost no data are available regarding Nass forage fish species. This assessment study would collect data that would contribute baseline data for halibut and forage fish species that would assist in determining potential impacts (i.e., relative abundance/timing changes, etc.) of any offshore development of oil and gas. Observations of marine mammals and sea birds would also be collected during this study (and the other proposals presented in this document).

Task & Objectives

1) In Year 1 (February 2005), preparations would be made, including locating a troller (or other vessel) to deploy long lines for catching halibut and setting up a catch sampling program that would also include the collecting of halibut stomachs for analyses of composition of forage fish species,
2) Also in Year 1 (March 2005), feasibility studies will be conducted using the vessel outfitted with long-line gear (5 d of sampling) and commercial/recreational catch of halibut will be monitored by an observer and available stomachs of halibut will be collected for analyses. A brief report documenting the results from the feasibility studies will be prepared.
3) Years 2-5 (April to November), catch sampling surveys using the long-line vessel (5 d per month) will be conducted with an estimated total of 400 stomachs collected per sampling year that will be analyzed for forage fish species. Length will be measured from halibut that are caught in long-line surveys. Catch monitoring will also be conducted 7 d per month to collect additional information on distribution, abundance and harvest rates of halibut in the Nass marine area. Observations of marine mammals and seabirds will be collected during this study.
4) In Years 2-5, detailed reports will be prepared of all results and presented in DFO's manuscript, technical, or PSARC reports.

Estimated Costs of Project 4.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 52,610	(prep, feasibility studies)
Year 2 (2005-2006):	$ 277,630	(prep, field surveys, sample analysis, reporting)
Year 3 (2006-2007):	$ 277,630	(prep, field surveys, sample analysis, reporting)
Year 4 (2007-2008):	$ 277,630	(prep, field surveys, sample analysis, reporting)
Year 5 (2008-2009):	$ 277,630	(prep, field surveys, sample analysis, reporting)

Costs in Years 2-5 may be revised for effort, area, timing and samples to be analyzed depending on the consultation process.

Reference

Roseneau, D.G. and G.V. Byrd. 1999. Using predatory fish to sample forage fishes, 1995-1999. Alaska Predator Ecosystem Experiment in Prince William Sound and the Gulf of Alaska [D.C. Duffy, 1999, Exxon Valdez Oil Spill Restoration Project Final Report (Restoration Project 99163 A-T), Paumanok Solutions, 102 Aikahi Loop, Kailua, Hawaii 96734].

Project 5.0 Shrimp & Prawn Assessment and Commercial Catch Monitoring Program

Description

Nisga'a Fisheries proposes conducting trapping surveys in the Nass Area marine waters to determine abundance and species composition by area and time, seasonal migrational patterns of shrimp/prawn species, collect biological data (size, injury incidence, etc.), monitor a portion of the commercial fishery with an observer, and evaluate environmental conditions (e.g., zooplankton, temperature and salinity) with respect to distribution of shrimp/prawn species. Surveys, including feasibility studies, are proposed to begin in 2005. A shrimp/prawn trawler will be contracted (or a Nisga'a vessel outfitted) to set traps from May to July (for 5 d per month) in the Nass Estuary, Observatory and Portland Inlets. In addition to the trapping program, an observer will collect catch data from commercial/recreational/food fisheries conducted in the Nass Area, approximately 5 d per month from May to July. These data have never been collected before for Nass shrimp/prawn species and will provide baseline data that would be beneficial in determining potential impacts (i.e., relative abundance/timing changes, etc.) of any offshore development of oil and gas.

Task & Objectives

1) No studies would be conducted in Year 1 (2004-2005).
2) In Years 2-5 (April to September), preparations would be conducted, including locating a trawler (or retrofit a Nisga'a vessel) to deploy shrimp/prawn traps in the Nass marine area. Sampling (species ID, biological data (i.e., length, depth info, environmental conditions, etc.) would then be conducted 5 d per month within the Nass Estuary, Observatory and Portland Inlets, setting approximately 90 traps per month,
3) Also in Years 2-5 (April to September), commercial catch of shrimp/prawns would be monitored by an observer (5 d per month) to collect additional information on distribution, abundance and harvest rates of shrimp/prawn in the Nass marine area.
4) Detailed reports would be prepared each year documenting all results and would be presented in DFO's manuscript, technical, or PSARC reports.

Estimated Costs of Project 5.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 0	(no study)
Year 2 (2005-2006):	$ 115,710	(prep, feasibility/field/catch surveys, reporting)
Year 3 (2006-2007):	$ 93,650	(prep, field/catch surveys, reporting)
Year 4 (2007-2008):	$ 93,650	(prep, field/catch surveys, reporting)
Year 5 (2008-2009):	$ 93,650	(prep, field/catch surveys, reporting)

Costs in Years 2-5 may be revised for effort, area, timing and traps to be set depending on the consultation process in Year 1.

Project 6.0 Nass Area Crab Assessment and Commercial Catch Monitoring Program

Description

Nisga'a Fisheries proposes conducting trapping surveys in the Nass Area marine waters to determine abundance/species composition by area, depth and time, seasonal patterns of crab species (i.e., Tanner, Dungeness, King, etc.), collect biological data (size, sex, shell hardness, injury, etc.), monitor a portion of the commercial fishery with an observer, and evaluate environmental conditions (e.g., temperature and salinity) with respect to distribution of crab species. This assessment program would build on the Dungeness crab study that was conducted in the Nass Estuary between 2000 and 2002 (Alexander et al. 2003). The past study focused on shallow sets to sample and tag male (legal-sized) crabs whereas this study would attempt to sample at deeper depths for a wider distribution of all species, regardless of sex and size. Trapping surveys are proposed to begin in 2007, five years after the 2000-2002 study that provided baseline data of the Dungeness crab population before increased access to the area (i.e., road completed to Kincolith in 2002). The surveys would be conducted in selected areas of the Nass Estuary, Observatory and Portland Inlets (unlike the 2000-2002 study that was conducted in the Nass Estuary (Area 3-12, 3-18) only). The Nisga'a vessel, Xsgaagim Lisims, will set traps from April to October (10 d per month) and collect biological data similar to the 2000-2002 study. A tagging program may be initiated to determine seasonal movement and distribution patterns of crabs in the sampling areas. In addition to the trapping program, an observer will collect commercial catch data in the Nass Area during the commercial fishery (October 1 to November 15), during the most intensive period (Oct 1-10), approximately 10 d of monitoring. Assessment studies of all Nass crab species will provide important baseline data that could be used to determine potential impacts (i.e., relative abundance/timing changes, etc.) of any offshore development of oil and gas.

Task & Objectives

1) No studies would be conducted in Years 1-3 (2004-2006)
2) In Years 4-5 (April to October), preparations would be made, including obtaining all traps required for the study. Sampling (i.e., location, date, species ID, biological data (i.e., length, sex, shell hardness, depth info, environmental conditions, etc.) would then be conducted 10 d per month within the Nass Estuary, Observatory and Portland Inlets, setting approximately 180 traps per month,
3) Also in Years 4-5 (October), commercial catch of crabs would be monitored by an observer (10 d) to collect additional information on distribution, abundance and harvest rates of crabs in the Nass marine area,
4) Detailed reports would be prepared in each year documenting all results and would be presented in DFO's manuscript, technical, or PSARC reports.

Estimated Costs of Project 6.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$	0 (no study)
Year 2 (2005-2006):	$	0 (no study)

Year 3 (2006-2007):	$ 0	(no study)
Year 4 (2007-2008):	$ 188,385	(prep, purchase traps, field surveys, reporting)
Year 5 (2008-2009):	$ 174,685	(prep, purchase traps, field surveys, reporting)

Costs in Years 4-5 may be revised for effort, area, timing and traps required to be set depending on the consultation process in Years 1-3.

Reference

Alexander, R.F., W.J. Gazey, and I. Winther. 2003. Assessment of the Dungeness crab population in the Nass estuary, 2000 and 2001. PSARC Working Paper I2003-05

Project 7.0 Nass Area Shellfish Assessment Program

Description

Nisga'a Fisheries proposes conducting a study on intertidal and sub-tidal shellfish species (e.g., mussels, clams, cockles, geoducks, scallops, abalone) within the Nass marine area to assess distribution, abundance, species composition, biomass and collect biological data (length, weight, age & growth) that will assist in the annual management of Nass area shellfish species. The proposed assessment study would also provide important baseline data for Nass shellfish species that could be used to determine potential impacts (i.e., changes in relative abundance, species composition, biological factors, etc.) of any offshore development of oil and gas. The proposed study would also build upon data collected during the bivalve, intertidal assessment program that was conducted in Nasoga Gulf, Winter, Portland and Observatory Inlets in 2002 and 2003 (Baxter et al. 2004). The 2002-2003 study focused on intertidal surveys in selected areas whereas this proposed study would attempt to collect data from deeper waters and assess important economic species like abalone. The initiation of the shellfish assessment program would begin in 2005 with consultations/meetings, a feasibility study using acoustic and diving surveys within selected areas of the Nass Estuary, Iceberg Bay, Portland and Observatory Inlets in August and September. Acoustic and diving surveys are then proposed for the following year in August and September 2006. In 2007 and 2008, the assessment program would switch focus from deep water to intertidal surveys using techniques as outline in Gillespie and Kronlund (1999) and Baxter et al. (2004). The Nisga'a vessel, Xsgaagim Lisims, would be used for acoustic, diving and beach (intertidal) surveys. The shellfish assessment program would also incorporate data (e.g., environmental (salinity, temp, etc.), larvae and plankton sampling) collected from other programs (e.g., eulachon larvae, egg and plankton trawl sampling program) to assess productivity of Nass Area shellfish species.

Task & Objectives

1) No studies would be conducted in Year 1 (2004-05), however, study plans would be further developed during the research consultation process in Year 1;
2) In Years 2 and 3 (2005 and 2006), preparation (i.e., outfit vessel for acoustic/diving surveys), meetings and consultations with DFO would occur in May 2005. A feasibility survey (acoustic; 5 d) would also be conducted in May 2005 to finalize sampling/diving locations. In August and September 2005 and 2006, diving (20 d per month using 2 professional divers) and acoustic (5 d per month using Xsgaagim Lisims) surveys would be conducted in selected areas of the Nass

Estuary, Iceberg Bay, Portland and Observatory Inlets to assess deep water shellfish species (e.g., abalone, scallops, geoducks, etc.).

3) In Years 4 and 5 (2007 and 2008), intertidal beach surveys throughout the Nass Marine area would be conducted by Nisga'a Fisheries (Xsgaagim Lisims and sampling crew) in August and September 2007 and 2008 (15 days per month) to assess bivalve species (e.g., cockles, clams, mussels, etc.).
4) In Years 2-5, detailed reports will be prepared of all results and presented in DFO's manuscript, technical, or PSARC reports.

Estimated Costs of Project 7.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 0	(no study)
Year 2 (2005-2006):	$ 195,340	(consultations, prep., feasibility study (acoustic), field surveys (sub-tidal; acoustic/diving), reporting)
Year 3 (2006-2007):	$ 163,700	(prep, field surveys (sub-tidal; acoustic/diving), reporting)
Year 4 (2007-2008):	$ 87,080	(prep, field surveys (intertidal), reporting)
Year 5 (2008-2009):	$ 87,080	(prep, field surveys (intertidal), reporting)

Costs in Years 2-5 may be revised for effort, area, timing and samples to be analyzed depending on the consultation process.

Reference

Gillespie, G.E. and A.R. Kronlund. 1999. A manual for intertidal clam surveys. Can. Tech. Rep. Fish. Aquat. Sci. 2270: 144 p.

Baxter, B.E., B.B. Stewart, S. Sviatko and G.E. Gillespie. 2004 (DRAFT). Intertidal bivalve calm surveys of the North Coast of BC, 2002 and 2003. Can. Manusc. Rep. Fish. Aquat. Sci. XXXX: vii + xx p.

Project 8.0 Marine Mammal and Bird Surveys

Description

The Nisga'a Wildlife Program proposes to collect essential data on the seasonal distribution and use of the marine waters of the Nass River by marine mammals and marine birds. The study is also intended to document relative abundance of animals and provide information on habitat use. There is little up-to-date information on marine wildlife in British Columbia north of Prince Rupert. Many of the species present in this area are migratory, but use the area regularly during at least a portion of the year. Thus it is necessary to determine to seasonality of their occurrence as well as the magnitude of their populations in the region. Although each species group would require a slightly different method and timing to survey them effectively, it is possible to design a compromise survey to survey for all species at once. We propose to conduct aerial surveys along the coast of the mainland north of Prince Rupert and include major islands such as Dundas and Zayas islands. The survey would extend much of the way up Portland Canal and Observatory Inlet and include the mouth of the Nass River. Surveys would be flown near shore using a twin engine aircraft or a Beaver on floats. Three observers would be on board to observe

and record data. All flight lines would be documented using GPS and observations would be linked to the flight lines using a digital timer. Observations would be recorded on tape and photographic records would be made for groups of animals to allow subsequent counts to be made in the office. Nine surveys per year would be required to survey seasonal movements and concentrations of birds and to document haul outs and non-breeding sealions in the area. Surveys are tentatively scheduled for mid January, mid February, mid March, mid April, mid May, mid June, mid September, mid October, and late November.

Task & Objectives

1) The first FY (2004-2005) would be used to further plan the aerial survey program, gather any existing data, confer with other researchers regarding the survey design and opportunities and initiate surveys during early 2005.
2) In Years 2 -4 (FY2005-06 to 2008-09), the survey program would be repeated on an annual basis in order to collect a full 4 years of data. The importance of repeating the survey over a number of years is to determine annual variation in the distribution and abundance of species so that in the event of a disturbance the surveys can be repeated and any differences can be detected statistically.
3) Annual reports will be prepared as well as a completion report to be submitted at the conclusion of the surveys in spring 2009.

Estimated Costs of Project 8.0 (see SUMMARY for task breakout by year)

Year 1 (2004-2005):	$ 65,415	(design, information review, consultations, start of aerial surveys)
Year 2 (2005-2006):	$ 144,150	(aerial surveys, annual report)
Year 3 (2006-2007):	$ 144,150	(aerial surveys, annual report)
Year 4 (2007-2008):	$ 144,150	(aerial surveys, annual report)
Year 5 (2008-2009):	$ 116,885	(aerial surveys, annual report)

DETAILED BUDGET SUMMARY BY YEAR, PROJECT AND TASK

Table 1 PROPOSED NASS MARINE STUDIES: DETAILED BUDGET AND TASKS, 2004-2008 VERSION: 4/9/04

NBS	PROJECT/ACTIVITY/TASK	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
2.0	PLANNING/CONSULTATION, TRAINING						
	1) Preparation of reporting, training etc	$1,720	$0	$0	$0	$0	$1,720
	2) Workshop - Research Planning/Outreach (1 d - Sept)	$6,400	$0	$0	$0	$0	$6,400
	3) Meetings - Planners (2-3 per year May, Dec, Mar)	$14,190	$21,000	$21,000	$21,000	$21,000	$98,190
	4) Study Design Development	$12,800	$10,000	$10,000	$10,000	$10,000	$52,800
	5) Training - Science (10 analysts, year, incl - 3 d (Sep)	$13,440	$0	$0	$0	$0	$13,440
1.0Y	TOTAL COSTS - PROJECT 1	$48,550	$31,000	$31,000	$31,000	$31,000	$172,550
2.0X	ICHTHYOPLANKTON SURVEYS	$0	$32,240	$32,240	$32,240	$32,240	$128,960
	1) Gear preparation - Bongo nets, acoustic, sampling (Aug-Sept)	$43,040	$9,720	$9,720	$9,720	$9,720	$82,920
	2) Feasibility - Bioacoustics + Surveys - 4 d (Sep-Oct)	$5,530	$0	$0	$0	$0	$5,530
	3) Feasibility - Acoustics - 4 d (Sep-Oct)	$3,420	$0	$0	$0	$0	$3,420
	4) Field Surveys - Bongo Nets (Apr-Sep (2 5 d per month)	$0	$0	$0	$0	$0	$0
	5) Field Surveys - Acoustic gear & analysis (Apr-Sep (2 5 d per m	$0	$69,225	$69,225	$69,225	$69,225	$276,900
	6) Sample Analysis - Phytoplankton (n=360 @ 120/month)	$0	$46,800	$46,800	$46,800	$46,800	$187,200
	7) Sample Analysis - Zooplankton (n=360 @ 120/month)	$1,046	$17,250	$17,250	$17,250	$17,250	$69,046
	8) Analysis & Reporting	$1,067	$33,000	$33,000	$33,000	$33,000	$133,067
2.0Y	TOTAL COSTS - PROJECT 2	$54,103	$176,995	$176,995	$176,995	$176,995	$717,083
3.0	HYDROACOUSTIC/MIDWATER TRAWL STUDY	$0	$0	$0	$0	$0	$0
	1) Gear preparation - trawl, acoustic, water sampling - Aug	$7,350	$11,100	$11,100	$11,100	$11,100	$51,750
	2) Feasibility - Beam/Tucker Trawl (Sep, 3 d)	$13,146	$0	$0	$0	$0	$13,146
	3) Feasibility - Seine (Sep, 2 d per month)	$13,146	$0	$0	$0	$0	$13,146
	4) Feasibility - Acoustic (Sep, 3 d per month)	$18,000	$0	$0	$0	$0	$18,000
	5) Field Surveys - Beam/Tucker Trawls (June-Oct, 3 d per month)	$0	$0	$0	$0	$0	$0
	6) Field Surveys - Acoustic (June-Oct, 3 d per month)	$0	$74,025	$74,025	$74,025	$74,025	$296,100
	7) Field Surveys - Seine (June-Oct, 3 d per month)	$0	$54,000	$54,000	$54,000	$54,000	$216,000
	8) Field Surveys - Otter Trawls	$0	$74,025	$74,025	$74,025	$74,025	$296,100
	9) Sample Analysis - Phytoplankton	$0	$0	$0	$0	$0	$0
	10) Sample Analysis - Zooplankton (n=375 @ 75/month)	$0	$0	$0	$0	$0	$0
	11) Sample Analysis - Otoliths (n=600 @ 150 per month)	$15,000	$30,000	$30,000	$30,000	$30,000	$135,000
	12) Sample Analysis - Stomachs (n=2400 @ 600 per month)	$3,750	$18,000	$18,000	$18,000	$18,000	$75,750
	13) Analysis & Reporting	$4,000	$4,000	$4,000	$4,000	$4,000	$16,000
3.0Y	TOTAL COSTS - PROJECT 3	$75,392	$265,150	$265,150	$265,150	$265,150	$1,105,992
4.0	NEARSHORE/MACROFAUNA/SEINE MONITORING	$0	$0	$0	$0	$0	$0
	1) Gear preparation - trawl, net sampling, monitoring	$1,720	$0	$0	$0	$0	$1,720
	2) Feasibility - Trawl Program (5 d, May)	$23,100	$0	$0	$0	$0	$23,100
	3) Feasibility - Catch Sampling (7 d, Mar)	$5,137	$0	$0	$0	$0	$5,137
	4) Field Surveys - Long-line Program (Apr-Aug, 5 d/month)	$0	$0	$0	$0	$0	$0
	5) Field Surveys - Catch Sampling (Apr-Sep, 5 d/month)	$0	$151,100	$151,100	$151,100	$151,100	$604,400
	6) Sample Analysis - Stomach Analysis (n=600 @ 150 per month)	$0	$18,714	$18,714	$18,714	$18,714	$74,856
	7) Otolith Analysis - Otoliths	$10,000	$60,000	$60,000	$60,000	$60,000	$250,000
	8) Analysis & Reporting	$0	$0	$0	$0	$0	$0
4.0Y	TOTAL COSTS - PROJECT 4	$39,957	$229,814	$229,814	$229,814	$229,814	$959,213
5.0	TRAWL/SEINE/GILLNET ASSESSMENT PROGRAM	$0	$0	$0	$0	$0	$0
	1) Gear preparation - trawl, net, gillnet, monitoring	$0	$13,200	$0	$0	$0	$13,200
	2) Feasibility - Trawl Program (5 d/m, May - Oct)	$0	$0	$0	$0	$0	$0
	3) Feasibility - Catch Monitoring (5 d/m, May - Oct)	$0	$0	$0	$0	$0	$0
	4) Field Surveys - Trawl Program (May-Sep, 5 d per month)	$0	$7,041	$0	$0	$0	$7,041
	5) Field Surveys - Catch Monitoring (Gillnet, May - Oct)	$0	$0	$0	$0	$0	$0
	6) Analysis & Reporting	$0	$14,165	$14,165	$14,165	$14,165	$56,660
5.0Y	TOTAL COSTS - PROJECT 5	$0	$34,406	$14,165	$14,165	$14,165	$76,901
6.0	NASS/AREMS/PACIFIC SHAD ASSESSMENT PROGRAM	$0	$115,711	$115,711	$115,711	$115,711	$462,844
	1) Gear preparation - traps, sampling, monitoring	$0	$0	$0	$0	$0	$0
	2) Field Surveys - Sampling (8 Trips (2) - Apr-Jun (10 d per m	$0	$0	$0	$18,540	$0	$18,540
	3) Field Surveys - Catch Monitoring (Jun - 10 d)	$0	$0	$0	$3,705	$3,705	$7,410
	4) Analysis & Reporting	$0	$0	$0	$3,900	$3,900	$7,800
6.0Y	TOTAL COSTS - PROJECT 6	$0	$0	$0	$26,145	$7,605	$33,750
7.0	NASS/AREMS/PACIFIC SHAD ASSESSMENT PROGRAM	$0	$0	$0	$169,125	$174,600	$343,725
	1) Preparation - gear, traps, boat prep	$0	$12,640	$0	$0	$0	$12,640
	2) Feasibility Study - Acoustic Survey	$0	$10,260	$0	$0	$0	$10,260
	3) Field Surveys - Deep Water Surveys	$0	$0	$0	$0	$0	$0
	4) Field Surveys - Acoustic	$0	$104,400	$104,400	$0	$0	$208,800
	5) Field Surveys - Intertidal Surveys	$0	$30,000	$30,000	$0	$0	$60,000
	6) Analysis & Reporting	$0	$0	$0	$24,000	$24,000	$48,000
7.0Y	TOTAL COSTS - PROJECT 7	$0	$79,300	$79,300	$24,100	$24,100	$206,800
8.0	MARINE MAMMAL AND BIRD SURVEYS	$0	$185,040	$185,040	$37,000	$37,000	$444,080
	1) Preparation - consultations, review, permits & survey protocol	$1,104	$0	$0	$0	$0	$1,104
	2) Aerial Surveys	$40,544	$0	$0	$0	$0	$40,544
	3) Analysis & Reporting	$0	$121,632	$121,632	$121,632	$121,632	$486,528
8.0Y	TOTAL COSTS - PROJECT 8	$41,648	$121,632	$121,632	$121,632	$121,632	$528,176
	TOTAL NASS AREA MARINE STUDIES	$260,650	$1,108,048	$1,130,470	$1,146,150	$1,146,150	$4,791,468

DETAILED BUDGET SUMMARY BY YEAR, PROJECT AND TASK

Table 1. PROPOSED NASS MARINE STUDIES: DETAILED BUDGET AND TASKS, 2004-2008. VERSION: 4/5/04

NSS	PROJECT DESCRIPTION / TASKS	YR 1 2004-05	YR 2 2005-06	YR 3 2006-07	YR 4 2007-08	YR 5 2008-09	TOTAL
2.0%	PLANNING, COORDINATION, TRAINING	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
	1) Preparation of workshop, training etc	$3,700	$0	$0	$0	$0	$3,700
	2) Workshop - Research Planning/partners (1 d - Sep)	$6,490	$0	$0	$0	$0	$6,490
	3) Meetings - Partners (2-3 per year: May, Dec, Mar)	$14,180	$21,990	$21,990	$21,990	$21,990	$102,120
	4) Study Design Development	$12,400	$10,300	$10,300	$10,300	$10,300	$53,600
	5) Training - Nisga'a (ID analysis, gear, etc) - 3 d (Sep)	$19,470	$0	$0	$0	$0	$19,470
1.0%	TOTAL COSTS - PROJECT 1.0	$56,238	$32,290	$32,290	$32,290	$32,290	$185,380
2.0%	EULACHON LARVAE & PLANKTON STUDY						
	1) Gear preparation - Bongo net, acoustic, sampling (Aug-Sep)	$43,050	$9,725	$9,725	$9,725	$9,725	$82,850
	2) Feasibility/Reconnaissance Surveys - 2 d (Sep-Oct)	$8,570	$0	$0	$0	$0	$8,570
	3) Feasibility - Acoustics - 2 d (Sep-Oct)	$3,429	$0	$0	$0	$0	$3,429
	4) Field Surveys - Bongo Nets (Apr-Sep @ 5 d per month)	$0	$89,225	$89,225	$89,225	$89,225	$356,900
	5) Field Surveys - Acoustic gear & analysis (Apr-Sep @ 5 d per m	$0	$46,500	$46,500	$46,500	$46,500	$186,000
	6) Sample Analysis - Phytoplankton (n=500 @ 150/month)	$858	$17,250	$17,250	$17,250	$17,250	$69,858
	7) Sample Analysis - Zooplankton ((n=900 @ 150/month)	$1,667	$30,000	$30,000	$30,000	$30,000	$121,667
	8) Analysis & Reporting	$2,150	$31,800	$31,800	$31,800	$31,800	$129,350
2.0%	TOTAL COSTS - PROJECT 2.0	$59,724	$224,500	$224,500	$224,500	$224,500	$957,724
3.0%	JUVENILE SALMONID MID-WATER TRAWL STUDY						
	1) Gear preparation - trawl, acoustic, seine, sampling - Aug	$7,950	$11,300	$11,300	$11,300	$11,300	$53,150
	2) Feasibility - Beam/Tucker Trawl (Sep; 2 d)	$13,145	$0	$0	$0	$0	$13,145
	3) Feasibility - Seine (Sep; 2 d per month)	$13,145	$0	$0	$0	$0	$13,145
	4) Feasibility - Acoustic (Sep; 3 d per month)	$18,000	$0	$0	$0	$0	$18,000
	5) Field Surveys - Beam/Tucker Trawls (June-Oct; 3 d per month	$0	$74,825	$74,825	$74,825	$74,825	$299,300
	6) Field Surveys - Acoustic (June-Oct; 3 d per month)	$0	$54,000	$54,000	$54,000	$54,000	$216,000
	7) Field Surveys - Seine (June-Oct; 3 d per month)	$0	$74,825	$74,825	$74,825	$74,825	$299,300
	8) Field Surveys - Otter Trawls	$0	$0	$0	$0	$0	$0
	9) Sample Analysis - Phytoplankton	$0	$0	$0	$0	$0	$0
	10) Sample Analysis - Zooplankton (n=375 @ 75/month)	$15,000	$30,000	$30,000	$30,000	$30,000	$135,000
	11) Sample Analysis - Otoliths (n=4500 @ 900 per month)	$3,600	$18,000	$18,000	$18,000	$18,000	$75,600
	12) Sample Analysis - Scales (n=4500 @ 900 per month)	$900	$4,500	$4,500	$4,500	$4,500	$18,900
	13) Analysis & Reporting	$2,150	$32,200	$32,200	$32,200	$32,200	$130,950
3.0%	TOTAL COSTS - PROJECT 3.0	$74,890	$299,650	$299,650	$299,650	$299,650	$1,272,490
4.0%	NASS AREA CHUM ASSESSMENT PROGRAM						
	1) Gear preparation - long-line, sampling, monitoring	$3,200	$0	$0	$0	$0	$3,200
	2) Feasibility - Trawl Program (5 d; Mar)	$27,137	$0	$0	$0	$0	$27,137
	3) Feasibility - Catch Sampling (7 d; Mar)	$8,137	$0	$0	$0	$0	$8,137
	4) Field Surveys - Long-line Program (Apr-Nov; 5 d/month)	$0	$151,190	$151,190	$151,190	$151,190	$604,760
	5) Field Surveys - Catch Sampling (Apr-Nov; 7 d/month)	$0	$18,714	$18,714	$18,714	$18,714	$74,856
	6) Sample Analysis - Stomach Analysis (n=400; 50 per month fo	$10,000	$80,000	$80,000	$80,000	$80,000	$330,000
	7) Sample Analysis - Otoliths	$0	$0	$0	$0	$0	$0
	8) Analysis & Reporting	$8,137	$27,726	$27,726	$27,726	$27,726	$117,041
4.0%	TOTAL COSTS - PROJECT 4.0	$56,610	$277,630	$277,630	$277,630	$277,630	$1,165,130
5.0%	SHRIMP & PRAWN ASSESSMENT PROGRAM						
	1) Gear preparation - traps, sampling, monitoring	$0	$13,250	$0	$0	$0	$13,250
	2) Feasibility - Trawl Program (5 d/m; May - July)	$0	$8,767	$0	$0	$0	$8,767
	3) Feasibility - Catch Monitoring (5 d/m; May - July)	$0	$2,043	$0	$0	$0	$2,043
	4) Field Surveys - Trawl Program (May-Sep; 5 d per month)	$0	$53,290	$53,290	$53,290	$53,290	$213,160
	5) Field Surveys - Catch Monitoring (5d/month; May - July)	$0	$14,145	$14,145	$14,145	$14,145	$56,580
	6) Analysis & Reporting	$0	$26,215	$26,215	$26,215	$26,215	$104,860
5.0%	TOTAL COSTS - PROJECT 5.0	$0	$145,210	$121,650	$121,650	$121,650	$498,160
6.0%	NASS AREA CRAB ASSESSMENT PROGRAM						
	1) Gear preparation - traps, sampling, monitoring	$0	$0	$0	$15,850	$0	$15,850
	2) Field Surveys - Sampling (& Tagging?) - Apr-Oct (10 d per mo	$0	$0	$0	$145,875	$148,075	$293,950
	3) Field Surveys - Catch Monitoring (Oct - 10 d)	$0	$0	$0	$3,880	$3,880	$7,720
	4) Analysis & Reporting	$0	$0	$0	$22,800	$22,800	$45,600
6.0%	TOTAL COSTS - PROJECT 6.0	$0	$0	$0	$188,405	$174,755	$363,070
7.0%	NASS AREA SHELLFISH ASSESSMENT PROGRAM						
	1) Preparation - consultations, gear prep	$0	$12,440	$0	$0	$0	$12,440
	2) Feasibility Study - Acoustic Surveys	$0	$19,200	$0	$0	$0	$19,200
	3) Field Surveys - Deep Water Surveys	$0	$104,400	$104,400	$0	$0	$208,800
	4) Field Surveys - Acoustic	$0	$30,000	$30,000	$0	$0	$60,000
	5) Field Surveys - Intertidal Surveys	$0	$0	$0	$82,920	$82,920	$165,840
	6) Analysis & Reporting	$0	$29,300	$29,300	$24,160	$24,160	$106,920
7.0%	TOTAL COSTS - PROJECT 7.0	$0	$195,540	$163,700	$107,080	$107,080	$573,200
8.0%	MARINE MAMMAL AND BIRD SURVEY						
	1) Preparation - consultations, review, design & survey initiation	$13,645	$0	$0	$0	$0	$13,645
	2) Aerial Surveys	$40,545	$121,635	$121,635	$121,635	$81,090	$486,540
	3) Analysis & Reporting	$11,225	$22,515	$22,515	$22,515	$35,795	$114,565
8.0%	TOTAL COSTS - PROJECT 8.0	$65,415	$144,150	$144,150	$144,150	$116,885	$614,750
	TOTAL NASS AREA MARINE STUDIES	$308,869	$1,288,270	$1,236,570	$1,347,535	$1,346,370	$5,525,614